CLAIM(S)

I claim:

1. An alkyl peptide amide, comprising:

an alkyl moiety having at least twelve (12) carbon atoms, the alkyl moiety including a carbonyl terminus;

a peptide moiety, the peptide moiety having an inhibitor region and an N-terminus, the inhibitor region comprising a sequence of amino acids substantially homologous to a binding domain within a first protein, wherein the binding domain is capable of binding a second protein in the intracellular space of a living cell; and

an amide linkage between the carbonyl terminus of the alkyl moiety, and the N-terminus of the peptide moiety.

2. An alkyl peptide amide according to claim 1, wherein the alkyl moiety comprises at least eighteen (18) carbon atoms.

3. An alkyl peptide amide according to claim 1, wherein the peptide moiety comprises at least about four (4) and up to about forty (40) amino acid residues.

4. An alkyl peptide amide according to claim 1, wherein the inhibitor region of the peptide moiety comprises a sequence of amino acids substantially homologous to the region of an A-kinase anchoring protein first protein capable of binding a cyclic AMP dependent protein kinase A second protein.

5. An alkyl peptide amide according to claim 4, wherein the inhibitor region of the peptide moiety comprises a sequence of amino acids selected from the group consisting of:

LIEEAASRIVDAVI; TAEEVSARIVQVVT; LIETASSLVKNAIQ; LIETASSLVKNAIE; EVAAEVLAEVITAAVKAV; IIDMASTALKSKSQ; LAEKIVAEAIEKAE; and VISEATEQVLATTVGKVAGRVC.

6. An alkyl peptide amide, comprising:

an alkyl moiety of at least twelve (12) carbon atoms, the alkyl moiety having a carbonyl terminus;

a peptide moiety of at least about four (4) and up to about forty (40) amino acid residues, having an inhibitor region and an N-terminus, the inhibitor region comprising a sequence of amino acids selected from the group consisting of:

LIEEAASRIVDAVI; TAEEVSARIVQVVT; LIETASSLVKNAIQ; LIETASSLVKNAIE; EVAAEVLAEVITAAVKAV; IIDMASTALKSKSQ; LAEKIVAEAIEKAE; and VISEATEQVLATTVGKVAGRVC; and

an amide linkage between the carbonyl terminus of the alkyl moiety and the N-terminus of the peptide moiety.

7. A pharmaceutical composition of an alkyl peptide amide comprising:

a pharmaceutically acceptable table carrier; and

an alkyl peptide amide, comprising:

an alkyl moiety of at least twelve (12) carbon atoms, the alkyl moiety having a carbonyl terminus;

a peptide moiety, the peptide moiety having an inhibitor region and an N-terminus, the inhibitor region comprising a sequence of amino acids substantially homologous to a binding domain of a first protein, wherein the binding domain is capable of binding a second protein in the intracellular space of a living cell; and

an amide linkage between the carbonyl terminus of the alkyl moiety, and the N-terminus of the peptide moiety;

8. A pharmaceutical composition according to claim 7, the inhibitor region comprising the sequence of amino acids is substantially homologous to the binding domain of the first protein which is an anchor portion, wherein the binding domain is capable of binding the second protein which is a protein kinase.

9. A pharmaceutical composition according to claim 7, wherein the amount of alkyl peptide amide in the composition is sufficient to substantially inhibit binding of the first protein to the second protein, when administered to a living cell containing the second protein and the first protein.

10. A pharmaceutical composition according to claim 9, wherein the amount of alkyl peptide amide is sufficient to cause at least a 50% reduction of activity of the second protein when administered to the living cell.

11. A method of using an alkyl peptide amide to inhibit the binding of a first protein to a second protein in a living cell, comprising the steps of:

(a) selecting a living cell having a first protein, a second protein, and a cell membrane surrounding an intracellular space, wherein the first protein has at least one binding domain capable of binding the second protein in the intracellular space;

(b) providing an alkyl peptide amide, comprising:

an alkyl moiety of at least twelve (12) carbon atoms, the alkyl moiety having a carbonyl terminus;

a peptide moiety, the peptide moiety having an inhibitor region and an N-terminus, the inhibitor region comprising a sequence of amino acids substantially homologous to the binding domain of the first protein for the second protein; and

an amide linkage between the carbonyl terminus of the alkyl moiety, and the N-terminus of the peptide moiety; and

(c) exposing the alkyl peptide amide to the living cell so that the peptide moiety permeates the cell membrane and inhibits the binding of the first protein to the second protein.

12. A method according to claim 11, wherein the selection step (a) is accomplished by selecting a first protein which is an anchor protein having a binding domain; and

wherein the providing step (b) is accomplished by providing the alkyl peptide amide having the inhibitor region of the peptide moiety which consists of a sequence of amino acids substantially homologous to the binding domain of the anchor protein.

13. The method of claim 12, further comprising:

selecting the living cell in step (a) having an anchor protein with a binding domain capable of binding the second protein, wherein the second protein is a protein kinase A; and

providing the alkyl peptide amide in step (b), wherein the inhibitor region of the peptide moiety comprises a sequence of amino acids substantially homologous to the protein kinase A binding domain of the anchor protein first protein.

14. A method according to claim 10, wherein a sufficient amount of the alkyl peptide amide is combined with the living cell to disrupt the binding of the protein kinase second protein to the anchor protein first protein in step (c) to result in an inhibition of biological responses in the living cell which are mediated by protein kinase A.

15. A method according to claim 10, further comprising:

selecting the living cell in step (a) having a first protein and a second protein, wherein the second protein is protein kinase A, and wherein the first protein is present in the intracellular space of the cell wherein the first protein has a binding domain which binds to protein kinase A; and

providing the alkyl peptide amide in step (b), wherein the inhibitor region of the alkyl peptide amide comprises a sequence of amino acids substantially homologous to the protein kinase A binding domain of the first protein.

16. An alkyl peptide, comprising:

an alkyl moiety having at least twelve (12) carbon atoms;

a peptide moiety, the peptide moiety having an inhibitor region comprising a sequence of amino acids substantially homologous to a binding domain of a first protein, wherein the binding domain is capable of binding a second protein in the intracellular space of a living cell; and

a linkage between the alkyl moiety, and the peptide moiety.

17. An alkyl peptide according to claim 15 wherein the linkage is an amide linkage.

18. An alkyl inhibitor amide comprising:

an alkyl moiety having at least twelve (12) carbon atoms;

an inhibitor moiety, the inhibitor moiety having an inhibitor region capable of inhibiting binding between a first protein and a second protein in the intracellular space of a living cell; and

an amide linkage between the alkyl moiety and the inhibitor moiety.

19. The alkyl inhibitor amide according to claim 18, wherein the inhibitor moiety is a peptide moiety.

20. The alkyl inhibitor amide according to claim 18, wherein the inhibitor moiety is a peptidomimetic moiety.